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professional solutions

LP6060100-CI • Polymer Lithium-ion battery

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1. Scope

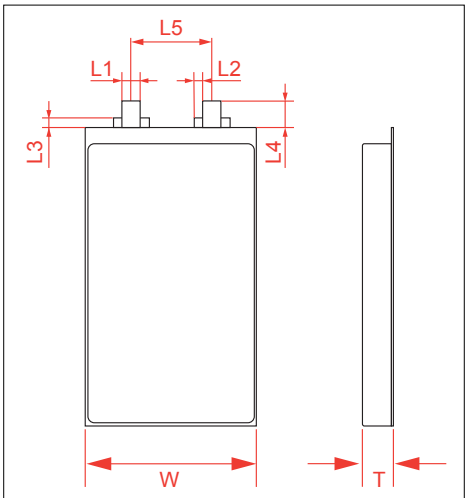
This product specification describes polymer lithium-ion battery. Please using the test methods that recommend in this specification. If you have any opinions or advices about the test items and methods, please contact us. Please read the cautions recommended in the specifications first, take the credibility measure of the cell's using.

If the cells should be using at the environment that not preferred in this document, please contact us and get our authorization. For the reason of stable performance and better safety, battery pack with more than 2 cells connected in serial way should be charged with a balance charger.

It is claimed that we should have no any responsibility with the contingency and loss due to the cells' wrong usage (not preferred in the product specification).

2. Parameter

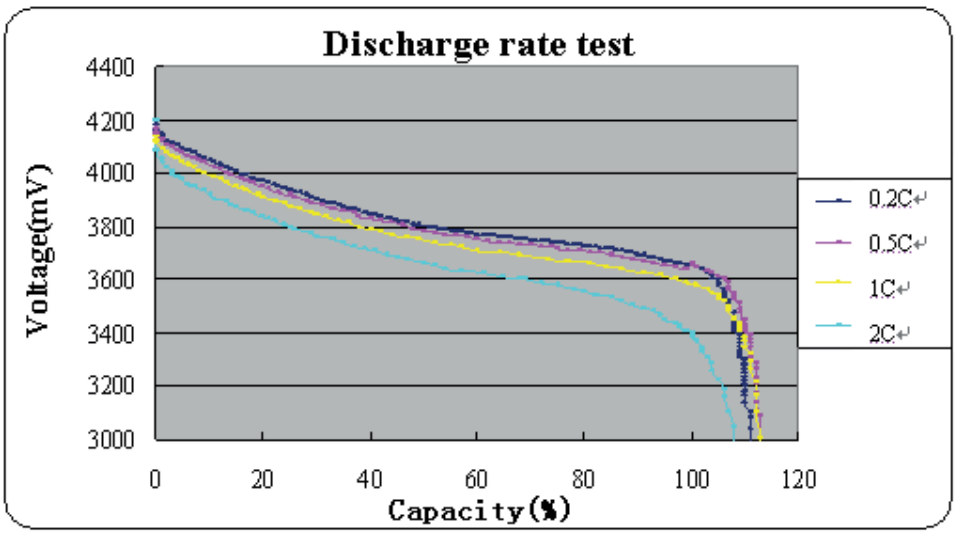
Description	Specification	Remark
Minimal Capacity	5000mAh	0.2C
Rated Capacity	5000mAh	0.2C
Nominal Voltaje	3.7V	
Storage Temperature	-5~35ºC	One year
Inner Impedance	≤40mΩ	
Max continue discharge current	2500mA	
Max charge current	2500mA	



L	100	100.5 max	**L1**	5	±0.2
T	6.0	6.0 max	**L5**	38 ±	2
W	60.0	60.5 max	**L4**	10	±0.2

units: mm

3. Characteristic Curves



4. Operating Temperature

NO.	Unit	Min	Typical	Max	Remark
Charge	ºC	0	25	45	
Discharge	ºC	-20	25	45	
Storage	ºC	-20	25	45	1 month
	ºC	-20	25	35	6 months

5. Electrochemical performance characteristics

Content	Testing method	Requirements
Charge cut-off voltage	4.20±0.01V	
Discharge cut-off voltage	3.00±0.01V	
Standard charge	**1.** Charge the battery at constant current of 0.2C to reach 4.2V. Then charge the battery at constant 4.2V voltage until the charging current decreasing to 0.01C **2.** Charge the battery at constant current of 0.5C to reach 4.2V. Then charge the battery at constant 4.2V voltage until the charging current decreasing to 0.01C	Charge time≤8 hours
Standard discharge	After the standard charging, rest for 1 hour then discharge to 3.0V@0.2C	Discharging time ≥300Min
Rate discharge	After the standard charging, rest for 1 hour then discharge to 3.0V@1C	Discharging time ≥51Min
High temperature characteristics	Fully charging, store them at (55±2)ºC for 2hours, then discharge to 3.0V @1C	Discharging time ≥51Min No transform No explosion No fire, No leakage
Low temperature characteristics	Fully charging, store them at (-10±2)ºC for 16~24 hours, then discharge to 3.0V @0.2C	Discharging time ≥210Min No transform No explosion No fire, No leakage
Capacity retention	Fully charging, store them at (20±2)ºC for 28 days, then discharge to 3.0V @0.2C	Discharging time ≥255Min
Cycle Life @25ºC	Discharge to 3.0V@0.5C, then charge the battery @0.5C to reach 4.2V. Then charge the battery at constant 4.2V voltage until the charging current decreasing to 0.01C. Rest for 10 min. discharge to 3.0V@ 0.5C and rest for 10 min. Continue the charge/discharge cycles until discharge capacity lower than 60% of rated capacity.	Cycle life≥200
Storage	Charge the battery to 40%~65% of its rated capacity using standard charging mode, then keep it in an 20ºC±5ºC, humidity 45%~85% room for 12 months. Discharge it @0.2C until voltage down to 3.0V. (The testing sample should be within 3 months dated from production date)	Discharging time ≥210Min

6. Environment Characteristics

Content	Testing method	Requirements
Hot&Humidity test	Full charging, store it at 40±2ºC with 90%~95RH% for 48 hours. Then put the battery at room temperature 20±2ºC for 2 hours. Then discharge to 3.0V @1C	Discharging time ≥36Min No explosion No transform No erosion No fire, No leakage
Vibration Test	After Standard Charging, fixed the battery to vibration table, then subjected to vibration test for 30 minutes per axis of XYZ axes Frequency rate: 1 oct/min Vibration frequency: 10Hz-30Hz Excursion(single amplitude): 0.38mm Vibration frequency: 30Hz-55Hz Excursion(single amplitude): 0.19mm	No leaking No fire No explosion Voltage≥3.7V
Shock test	After Standard Charging, test condition: Acceleration: 100m/s^2 Crash time per min: 40~80 times Pulse lasting time:16ms Shock times: 1000±10times	No leaking, No fire No explosion Voltage≥3.7V
Drop test	After standard charging, drop the battery from 100cm height onto a 18mm~20mm thick hardwood. Two sides of X,Y,Z directions each (total 6 times) After the drop test, discharge the battery @1C to 3.0V. Then charge it @1C to full capacity. Continue the test, within 3 times the battery should reach the target once.	No leaking No fire No expolosion Discharging ≥51Min

7. Safety performance

Content	Testing method	Requirements
Overcharge protection test	After standard charging. Apply a 7.4V stable Voltage and 1C stable current to the battery for 8 hours.	No fire No explosion
Over discharge protection test	After discharged to the cut-off voltage, the battery shall be subjected to a short-circuit condition with a load of resistance less than 30Ω for 24 hours	No fire No explosion
Short circuiting	After standard charging, the battery shall be subjected to a short-circuit condition with a wire of resistance less than 100mΩ for 1 hour. Cut off the circuit, Charge the battery with constant current at 1.0C for 5s	No fire No explosion Voltage≥3.7V
Impact test	After standard charge, Place the battery on a flat surface. A 9.1 kg article is to be dropped from a height of 100cm onto the sample. The battery is allowed to transform.	No fire No explosion
Heating test	After standard charging, a battery is to be heated in an oven convection or circulating air oven. The temperature of the oven is to be raised at a rate of 5±2ºC/min to a temperature of 130±2ºC and last for 30 minutes.	No fire No explosion

Content	Testing method	Requirements
Overcharge	After standard charging, put the battery in fume hood. Add constant voltage & current4.8V 3C to the battery. Charging it until the battery reaches 4.8V, charging current decreases to almost 0A. Record the temperature curve of the battery. When the battery temperature decreases to about 10ºC lower after reaching the peak temperature. End the test. **This test is performed without PCM**	No fire No explosion
Short circuit test	After standard charging, put the battery in fume hood. Connect the Negative Pole and Positive pole directly. (the wire's resistance should below 50mΩ). Record the battery's temperature curve during the test. When the battery temperature decreases to about 10ºC lower after reaching the peak temperature. End the test. **This test is performed without PCM**	No fire No explosion

Remark - Standard environmental test condition.

Unless special specified, all tests stated in this Product Specification are conducted at below condition:

Temperature: 25±2 2ºC;

Humidity: 45±20%RH

Test condition: 1. for battery with P CM,all tests are tested with PCM except 6 and 7.

2. for battery without protect PCM, all tests without PCM.

8. Packing Instruction

The photo, size and color of the mark are all comply with the requirement of GP/T 191-2000.

9. Warranty

The warranty is specified in our warranties section of *Terms of Sales.* If the product is to be stored for more than three months it is necessary to perform the appropriate maintenance to ensure the good condition of the batteries. Consult our annex to the *Terms of Sales* on the recommended maintenance.

10. Cautions

Danger Warning

Danger warning (it should be described in manual or instruction for users, indicated esp ecially) To prevent the possibility of the battery from leaking, heating, explosion,

Please observe the following precautions:

1. Do not disassemble or reconstruct battery.
2. Do not short-circuit battery.
3. Do not use or leave battery nearby fire, stove or heated place (more than 80ºC).
4. Do not immerse the battery in water or sea water, or get it wet.
5. Do not charge battery nearby the fire or under the blazing sun.
6. Do use the specified charger and observe charging requirement.
7. Do not drive a nail into the battery. Strike it by hammer, or tread it.
8. Do not give battery impact or fling it.
9. Do not use the battery with conspicuous damage or deformation.
10. Do not make the direct soldering on battery.
11. Do not reverse charge or overdischarge the cell.
12. Do not reverse-charge or reverse-connect.
13. Do not connect battery to the plug socket or car-cigarette-plug.
14. Do not use battery for unspecified equipment.
15. Do not touch a leaked battery directly.

Warning

1. Do not use Lithium ion battery in mixture.
2. Keep the battery away from babies.
3. Do not get into a microwave or a high pressure container.
4. Do not use a leaked battery nearby fire.
5. Do not use an abnormal battery.

Caution

1. Do not use or leave the battery under the blazing sun(or heated car by sunshine). The battery may smoke,heat or flame. And also, it might cause the deterioration of battery's characteristics or cycle life.
2. Do not use nearby the place where generates static electricity (more than 64V)
3. Do not charge the battery out of recommended temperature range of 0ºC and 60ºC.
4. When the battery has rust, bad smell or something abnormal at first-time-using, do not use the equipmentand go to bring the battery to the shop which it was bought.
5. In case children use the battery, their parents teach how to use batteries according to the manual with care.
6. If the skin or cloth is smeared with liquid from the battery, wash with fresh water.